

What is claimed:

1. A method of manufacturing an artificial rock, comprising the steps of:

(a) making an outer negative mold of a portion of a surface of natural rock;

5 (b) forming a test artificial rock with a cementitious material using the outer negative mold, the test artificial rock comprising an outer surface that replicates the portion of the surface of the natural rock and an inner surface defining a cavity;

(c) adding reinforcing members to the inner surface of the test artificial rock;

(d) making an inner mold of the inner surface of the test artificial rock;

10 (e) forming an artificial rock from a liquid cementitious material by molding the liquid cementitious material between the outer mold and the inner mold.

2. The method of claim 1, wherein the reinforcing members comprise ribs.

3. The method of claim 1 further comprising the steps of:

(f) grinding square edges on the artificial rock to a radius edge;

15 (g) making a second outer mold of the exterior surface of the artificial rock with the radius edges and a second inner mold of the interior surface of the artificial rock with the radius edges;

(h) forming a molded artificial rock with radius edges from liquid cementitious material by molding the liquid cementitious material between the second outer mold and the second inner mold.

20 4. The method of claim 1 wherein the outer mold comprises a malleable mold and a semi-rigid outer shell, the malleable mold having an inner surface that contains negative impressions corresponding to the surface features of the natural rock being replicated and an outer surface which mates with a corresponding inner surface of the semi-rigid outer shell.

5. The method of claim 4, wherein the semi-rigid outer shell comprises fiberglass.

6. The method of claim 4, wherein the malleable mold comprises latex rubber.

7. The method of claim 1, further comprising making a plurality of test artificial rocks with cementitious material using the outer mold, and compression testing at least one of the plurality of test artificial rocks for structural strength to identify structurally weak areas in the test artificial rocks.

8. The method of claim 7, wherein the reinforcing members are added to one of the test artificial rocks at the identified structurally weak areas and the inner mold is made from this test artificial rock.

9. The method of claim 1, wherein the reinforcing members comprise cementitious material.

10. The method of claim 1, further comprising grinding square edges on the artificial rock to a radius edge.

11. The method of claim 1, further comprising connecting the inner mold to the outer mold by a hinge.

12. The method of claim 1, further comprising vibrating the first mold and the second mold while molding the liquid cementitious material between the outer and inner molds.

13. The method of claim 1, further comprising painting or staining the surface of the formed artificial rock.

14. The method of claim 1, wherein the liquid cementitious material is colored to simulate a natural rock color.

15. The method of claim 14, further comprising painting or staining the surface of the formed artificial rock.

16. The method of claim 3, further comprising painting or staining the surface of the formed artificial rock with radius edges.

5 17. The method of claim 3, wherein the liquid cementitious material used to form the artificial rock with radius edges is colored to simulate a natural rock color.

18. The method of claim 16, further comprising painting or staining the surface of the formed artificial rock with radius edges.

10 19. The method of claim 1, further comprising coating the portion of the surface of the natural rock with a release agent prior to making the outer mold.

20. The method of claim 1, further comprising coating the opposing surfaces of the outer and the inner mold with a release agent prior to forming the artificial rock from the liquid cementitious material.

15 21. The method of claim 1, further comprising the step of predetermining the volume of the liquid cementitious material to use to form the artificial rock.

22. The method of claim 21, wherein the volume of liquid cementitious material to use to form the artificial rock is determined by adding an amount of water to the outer mold that exceeds the volume of space between the outer and inner molds when in their respective positions for molding the artificial rock, placing the outer and inner molds in their respective positions for molding the artificial rock to expel excess water from the outer mold, and measuring the volume of water remaining in the outer mold.

23. The method of claim 22 wherein the volume of the liquid cementitious material is approximately 102% of the water volume remaining in the outer mold.

24. A method according to claim 1, wherein the inner mold comprises a semi-rigid shell.

25. A method according to claim 24, wherein the semi-rigid shell comprises fiberglass.

5 26. A method of manufacturing an artificial rock, comprising the steps of:
(a) coating a portion of the surface of a natural rock with a release agent;
(b) making an outer negative mold of the portion of the surface of the natural rock, the outer negative mold comprising a malleable mold and a fiberglass shell, the malleable mold having an inner surface that contains negative impressions corresponding to the surface features of the natural rock being replicated and an outer surface which mates with a corresponding inner surface of the fiberglass shell;

10 (c) forming a test artificial rock with a cementitious material using the outer negative mold, the test artificial rock comprising an outer surface that replicates the portion of the surface of the natural rock and an inner surface defining a cavity;

15 (d) adding reinforcing ribs to the inner surface of the test artificial rock, the reinforcing ribs comprising cementitious material;

(e) making an inner mold comprising a fiberglass shell of the inner surface of the test artificial rock;

(f) forming an artificial rock from a liquid cementitious material by
20 molding the liquid cementitious material between the outer mold and the inner mold.

27. The method of claim 26, further comprising the steps of:

(g) grinding square edges on the artificial rock to a radius edge;

(h) making a second outer mold of the exterior surface of the artificial rock with the radius edges and a second inner mold of the interior surface of the artificial rock with the radius edges;

(i) forming a molded artificial rock with radius edges from liquid cementitious material by molding the liquid cementitious material between the second outer mold and the second inner mold.

28. The method of claim 26, further comprising making a plurality of test artificial rocks with cementitious material using the outer mold, and compression testing at least on of the plurality of test artificial rocks for structural strength to identify structurally weak areas in the test artificial rocks.

29. The method of claim 28, wherein the reinforcing ribs are added to one of the test artificial rocks at the identified structurally weak areas and the inner mold is made from this test artificial rock.

30. The method of claim 26, further comprising grinding square edges on the artificial rock to a radius edge.

31. The method of claim 26, wherein the malleable mold comprises latex rubber.

32. The method of claim 26, further comprising painting or staining the surface of the formed artificial rock.

33. The method of claim 26, wherein the liquid cementitious material is colored to simulate a natural rock.

34. The method of claim 33, further comprising painting or staining the surface of the formed artificial rock.

35. The method of claim 27, further comprising painting or staining the surface of the formed artificial rock with radius edges.

36. The method of claim 27, wherein the liquid cementitious material used to form the artificial rock with radius edges is colored to simulate a natural rock color.

5 37. The method of claim 36, further comprising painting or staining the surface of the formed artificial rock with radius edges.

38. An artificial rock comprising:
a dome of hardened cementitious material having a generally concave interior surface and an exterior surface that replicates the surface features of a natural rock;

10 a reinforcing ring around the edge of the inner circumference of the dome; and
reinforcing ribs along the interior surface of the dome.

39. The artificial rock of claim 38 wherein the reinforcing ring is comprised of hardened cementitious material.

15 40. The artificial rock of claim 39 wherein the reinforcing ring at least doubles the thickness of the dome wall at the inner circumference of the dome.

41. The artificial rock of claim 39 wherein the reinforcing ring at least triples the thickness of the dome wall at the inner circumference of the dome.

42. The artificial rock of claim 38 wherein the ribs are comprised of hardened cementitious material.

20 43. The artificial rock of claim 38 wherein the exterior surface of the dome is painted to simulate a natural rock.

44. The artificial rock of claim 38 wherein the exterior surface of the dome is stained to simulate a natural rock.

45. The artificial rock of claim 38 wherein the cementitious material is colored to simulate a natural rock.

46. The artificial rock of claim 38 wherein the cementitious material is colored and the exterior surface is stained to simulate a natural rock.

5 47. A support stand suitable for forming artificial rocks, comprising:
a plurality of straight members connected horizontally and vertically to form a frame to support a rock mold;

a rocker arm connected to the frame at one end, the rocker arm curving vertically to support the rock mold at one end; and

10 a rocker pivot point that is between the rock mold's center of gravity and the rocker arm.

48. A support stand suitable for forming artificial rocks of claim 47, wherein the straight members and rocker arm are made from aluminum

15 49. A support stand suitable for forming artificial rocks of claim 47, wherein the straight members and rocker arm are made from steel.

50. A support stand suitable for forming artificial rocks of claim 47, wherein the straight members and rocker arm welded together.

51. A support stand suitable for forming artificial rocks of claim 47, wherein the straight members and rocker arm comprise a weldable metal.

20 52. A support stand suitable for forming artificial rocks of claim 47, wherein the straight members and rocker arm comprise tubes of weldable metal.